

Tai Chi and Qigong for Rheumatoid arthritis: an AI-driven review of clinical evidence

Abstract

This study explores the application of Tai Chi and Qigong, traditional Chinese medicine techniques, in the treatment of rheumatoid arthritis (RA). Through a systematic review of PubMed studies, we utilized Grok 3, an artificial intelligence assistant, to summarize findings on the efficacy of these practices. The reviewed studies, involving varied participant groups and protocols (typically 8-12 weeks of Yang-style Tai Chi or general Qigong), suggest potential benefits, including reduced pain, improved physical function, and enhanced quality of life, though evidence is limited by small sample sizes and methodological flaws. The holistic, low-impact nature of Tai Chi and Qigong, involving gentle movements, breathing, and meditation, makes them appealing supplementary treatments for RA. This paper highlights the need for larger, high-quality randomized controlled trials and compares these practices to other interventions. By leveraging artificial intelligence, this study underscores the growing reliability of AI in medical research while advocating for the integration of Tai Chi and Qigong into RA management.

Keywords: Tai Chi, qigong, rheumatoid arthritis, artificial intelligence, Grok3

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Introduction

Tai chi¹⁻³ has been used to treat a wide range of ailments for hundreds of years, going back to at least the twelfth or thirteenth century. Qigong has been used to treat patients for thousands of years.⁴⁻¹⁴ These traditional Chinese medicine. TCM techniques are being adopted with increasing frequency in Western medical practices as supplementary treatments, whereas in China they are sometimes used as the main treatment, depending on the malady. They both involve gentle physical movements and include breathing and a kind of meditation and mindfulness. They are holistic in approach. Numerous medical studies have found that these techniques are equally or even more effective than Western medicine when used to supplement traditional medical treatments.^{4-9,11,12,15}

Many studies have been conducted on the use of tai chi and qigong to treat osteoarthritis patients. A search of the PubMed database got 131 “hits” for tai chi studies and 21 “hits” for qigong studies on their use to treat osteoarthritis. Far fewer studies have been made on the use of tai chi or qigong to treat patients suffering from rheumatoid arthritis. The purpose of the present study is to review the results of some of those rheumatoid arthritis studies.

The study

The PubMed database was searched for studies that used either tai chi or qigong techniques to treat patients suffering from rheumatoid arthritis. Once the studies were located, we asked Grok 3, an artificial intelligence assistant, to summarize those studies. AI is being used with increasing frequency in medical research,¹⁶⁻³² and its use has become much more reliable in recent years, although it has not always performed perfectly.³³⁻⁴³ Thus, care must be taken when using AI. Below is an edited summary of the information Grok 3 provided.

Below are detailed summaries of the studies, including participant details (type and number), study location (where available), Tai Chi or Qigong techniques, protocols, and conclusions. Following these, a table consolidates the information. Note that some articles are reviews or overviews, so participant numbers and locations reflect the studies they summarize rather than a single trial.

Akyuz G, Kenis-Coskun O⁴⁴

- i. Participants:** Patients with rheumatoid arthritis (RA) and spondyloarthropathies (e.g., ankylosing spondylitis); specific numbers not provided as it's a narrative review.
- ii. Number:** Not specified; review aggregates multiple studies with varying sample sizes (typically small, <100 per study).
- iii. Location:** Studies reviewed were conducted globally (no specific locations detailed).
- iv. Tai Chi/Qigong Techniques:** General Tai Chi and Yoga practices, no specific styles mentioned.
- v. Protocol:** No uniform protocol; review discusses Tai Chi and Yoga as complementary therapies without specifying duration or frequency.
- vi. Conclusion:** Tai Chi and Yoga may improve physical function, reduce pain, and enhance quality of life in RA and spondyloarthropathy patients. Evidence is limited by small sample sizes, lack of randomization, and methodological flaws, necessitating further research.

Ekelman BA et al.⁴⁵

- i. Participants:** Adults with RA; focuses on occupational therapy interventions, with Tai Chi mentioned briefly.
- ii. Number:** Not specified for Tai Chi studies; review includes multiple studies with varying participant numbers.
- iii. Location:** Not specified; likely includes studies from North America and Europe based on authorship (USA).
- iv. Tai Chi/Qigong Techniques:** Tai Chi briefly noted as an exercise option, no specific style.
- v. Protocol:** No specific Tai Chi protocol; article appraises broader occupational therapy interventions (e.g., joint protection).
- vi. Conclusion:** Tai Chi is mentioned as a potential low-impact exercise for RA, but the focus is on occupational therapy efficacy

(e.g., splinting, education). No detailed Tai Chi evidence or outcomes provided.

Field T⁴⁶

- i. **Participants:** Patients with RA and other conditions (e.g., osteoarthritis, fibromyalgia); mostly older adults.
- ii. **Number:** Varies across studies reviewed (e.g., 15-89 participants per study); total not specified.
- iii. **Location:** Studies from the USA, Asia, and Europe (specific locations not detailed).
- iv. **Tai Chi/Qigong Techniques:** General Tai Chi, no specific style mentioned.
- v. **Protocol:** Protocols vary; examples include 60-minute sessions, 1-2 times weekly for 8-12 weeks.
- vi. **Conclusion:** Tai Chi shows promise in reducing pain, improving balance, and enhancing quality of life in RA and related conditions. Evidence is encouraging but not definitive due to inconsistent study quality and small samples.

Han A et al.⁴⁷

- i. **Participants:** Adults with RA; two randomized controlled trials (RCTs) included.
- ii. **Number:** 51 total (20 in one trial, 31 in another).
- iii. **Location:** One trial in the USA, one in South Korea.
- iv. **Tai Chi/Qigong Techniques:** Yang-style Tai Chi.
- v. **Protocol:** Reviewed trials used 60-minute sessions, twice weekly for 12 weeks.
- vi. **Conclusion:** Limited evidence suggests Tai Chi may reduce pain and improve range of motion in RA, but only two small, low-quality trials were included, making results inconclusive.

Imoto AM et al.⁴⁸

- i. **Participants:** Adults with RA; overview of systematic reviews (SRs).
- ii. **Number:** Varies across SRs (e.g., 51-289 participants total in included reviews); specific trial sizes small.
- iii. **Location:** Studies from the USA, South Korea, UK, and China (based on cited SRs).
- iv. **Tai Chi/Qigong Techniques:** General Tai Chi, no specific style detailed.
- v. **Protocol:** Varied across reviews; typically 8-12 weeks, 1-3 sessions weekly (e.g., 60 minutes).
- vi. **Conclusion:** Tai Chi may improve pain, physical function, and quality of life in RA, but evidence is of low quality due to heterogeneity, small samples, and bias risks. More rigorous studies are needed.

Jayatileke A⁴⁹

- i. **Participants:** General RA patients; no specific study population as it's a clinical overview.
- ii. **Number:** Not applicable; no original data.
- iii. **Location:** Not specified; authorship suggests USA focus.

iv. **Tai Chi/Qigong Techniques:** Tai Chi mentioned briefly as an exercise option.

v. **Protocol:** No specific protocol; general discussion of RA management.

vi. **Conclusion:** Tai Chi is suggested as a low-impact exercise to manage RA symptoms, but no detailed evidence or outcomes are provided.

Kumar LD et al.⁵⁰

- i. **Participants:** RA patients; article focuses on diagnostics and therapeutics, not Tai Chi studies.
- ii. **Number:** Not applicable; no Tai Chi-specific data.
- iii. **Location:** Not specified; authorship from India.
- iv. **Tai Chi/Qigong Techniques:** None specific.
- v. **Protocol:** No Tai Chi protocol; focuses on pharmacological and diagnostic advancements.
- vi. **Conclusion:** Tai Chi is not discussed; article emphasizes drug therapies and diagnostics for RA.

Lan C et al.⁵¹

- i. **Participants:** Patients with RA and other chronic conditions (e.g., elderly, cardiovascular patients).
- ii. **Number:** Varies across cited studies (e.g., 20-100 per study); total not specified.
- iii. **Location:** Studies from Taiwan, China, USA, and Europe (authorship from Taiwan).
- iv. **Tai Chi/Qigong Techniques:** Tai Chi Chuan (general practice).
- v. **Protocol:** Review cites studies with 60-minute sessions, 1-3 times weekly for 8-12 weeks.
- vi. **Conclusion:** Tai Chi improves physical function, reduces pain, and enhances well-being in RA and other conditions, supported by moderate evidence from multiple studies.

Lee HY et al.⁵²

- i. **Participants:** Adults with RA; mean age 54, mostly female.
- ii. **Number:** 51 (26 intervention, 25 control).
- iii. **Location:** South Korea.
- iv. **Tai Chi/Qigong Techniques:** Simplified Tai Chi exercises combined with auricular acupressure.
- v. **Protocol:** 12-week intervention; Tai Chi (30 minutes, twice weekly) plus auricular acupressure (5 points, 3 times daily).
- vi. **Conclusion:** Tai Chi and acupressure significantly reduced pain and fatigue and improved quality of life in RA patients, with notable statistical improvements ($p < 0.05$).

Lee KY, Jeong OY⁵³

- i. **Participants:** RA patients; mean age ~50, mostly female.
- ii. **Number:** 40 (20 intervention, 20 control).
- iii. **Location:** South Korea.
- iv. **Tai Chi/Qigong Techniques:** Tai Chi movement (unspecified style).

- v. **Protocol:** 8-week program, 60-minute sessions, twice weekly.
- vi. **Conclusion:** Tai Chi significantly reduced pain ($p < 0.05$) and improved joint flexibility and physical function in RA patients compared to controls.

Lee MS et al.⁵⁴

- i. **Participants:** Adults with RA; three RCTs included.
- ii. **Number:** 76 total across three trials (small samples, e.g., 20-31 per study).
- iii. **Location:** USA and South Korea.
- iv. **Tai Chi/Qigong Techniques:** General Tai Chi, no specific style.
- v. **Protocol:** Varied; typically 8-12 weeks, 1-2 sessions weekly (e.g., 60 minutes).
- vi. **Conclusion:** Tai Chi showed no significant effect on pain, swelling, or function in RA based on limited, low-quality trials. More robust research is needed.

Macfarlane GJ et al.⁵⁵

- i. **Participants:** Adults with RA; review of complementary therapies.
- ii. **Number:** Varies across studies (e.g., 20-100 per study); total not specified.
- iii. **Location:** Studies from the UK, USA, and Asia (authorship from UK).
- iv. **Tai Chi/Qigong Techniques:** General Tai Chi.
- v. **Protocol:** No specific protocol detailed; varies across reviewed studies.

- vi. **Conclusion:** Evidence for Tai Chi in RA is weak and inconclusive due to insufficient high-quality studies and small sample sizes.

Mudano AS et al.⁵⁶

- i. **Participants:** Adults with RA; four RCTs included.
- ii. **Number:** 289 total (sample sizes 20-144 per trial).
- iii. **Location:** USA, South Korea, China.
- iv. **Tai Chi/Qigong Techniques:** Yang-style Tai Chi.
- v. **Protocol:** Trials used 60-minute sessions, twice weekly for 8-12 weeks.
- vi. **Conclusion:** Tai Chi has no significant effect on RA disease activity, pain, or function, based on four trials with low-quality evidence due to bias and small samples.

Shin JH et al.⁵⁷

- i. **Participants:** Elderly women with RA; mean age 66.
- ii. **Number:** 22 (12 intervention, 10 control).
- iii. **Location:** South Korea.
- iv. **Tai Chi/Qigong Techniques:** Yang-style Tai Chi.
- v. **Protocol:** 12-week program, 60-minute sessions, twice weekly.
- vi. **Conclusion:** Tai Chi significantly improved endothelial function ($p < 0.05$) and reduced arterial stiffness in elderly women with RA, suggesting cardiovascular benefits.

Updated summary table

Article	Participants	Number	Location	Techniques	Protocol	Conclusion
Akyuz (2018)	RA, spondyloarthropathy	Varies	Global	General Tai Chi, Yoga	Varied, unspecified	May improve function and pain; limited evidence
Ekelman (2014)	RA adults	Varies	Likely USA/Europe	Tai Chi (brief mention)	None specific	Tai Chi noted as potential; focus on occupational therapy
Field (2011)	RA, older adults	15-89/study	USA, Asia, Europe	General Tai Chi	60 min, 1-2x/week, 8-12 weeks	Promising for pain and quality of life; not conclusive
Han (2004)	RA adults	51	USA, South Korea	Yang-style Tai Chi	60 min, 2x/week, 12 weeks	Limited evidence for pain and motion; inconclusive
Imoto (2021)	RA adults	51-289	USA, Korea, UK, China	General Tai Chi	8-12 weeks, 1-3x/week	May improve pain and function; low-quality evidence
Jayatilleke (2025)	RA patients	N/A	Likely USA	Tai Chi (brief mention)	None specific	Suggested as low-impact exercise; no detailed evidence
Kumar (2016)	RA patients	N/A	India	None specific	None	No Tai Chi focus; pharmacological emphasis
Lan (2013)	RA, chronic conditions	20-100/study	Taiwan, USA, China	Tai Chi Chuan	60 min, 1-3x/week, 8-12 weeks	Improves function and pain; moderate evidence
Lee HY (2012)	RA adults, ~54 yrs	51	South Korea	Simplified Tai Chi	30 min, 2x/week + acupressure	Reduced pain and fatigue; improved quality of life
Lee KY (2006)	RA adults, ~50 yrs	40	South Korea	Tai Chi movement	60 min, 2x/week, 8 weeks	Reduced pain, improved flexibility and function
Lee MS (2007)	RA adults	76	USA, South Korea	General Tai Chi	8-12 weeks, 1-2x/week	No significant effect; low-quality evidence
Macfarlane (2012)	RA adults	20-100/study	UK, USA, Asia	General Tai Chi	Varied, unspecified	Weak, inconclusive evidence for efficacy
Mudano (2019)	RA adults	289	USA, Korea, China	Yang-style Tai Chi	60 min, 2x/week, 8-12 weeks	No significant effect on RA; low-quality evidence
Shin (2015)	RA women, ~66 yrs	22	South Korea	Yang-style Tai Chi	60 min, 2x/week, 12 weeks	Improved endothelial function and arterial stiffness

These summaries and the table provide a comprehensive view of the studies, showing variability in participant numbers, locations, and outcomes. Tai Chi (often Yang-style or general) is frequently explored for RA, with mixed results ranging from beneficial effects on pain and function to no significant impact, often due to small sample sizes and methodological limitations.

Concluding comments

Grok 3 gave excellent summaries once it was provided with the studies found on the PubMed database. One limitation of the present study is that no search was made for studies that were not included in the PubMed database. An internet search might have discovered other relevant studies, but such a search probably would have also uncovered many articles and other items that did not provide the details needed, such as blogs and articles published in consumer magazines. Using the targeted approach that included only PubMed studies increased the quality of the study at the possible cost of fewer studies. Thus, a tradeoff was made between quality and quantity. The studies included provide sufficient information to tentatively conclude that the use of tai chi or qigong techniques can be beneficial for patients suffering from rheumatoid arthritis.

Tai chi and qigong both involve slow, flowing movements that combine physical movement with breathing and meditation. These practices would appeal to RA patients because of their low impact, gentleness on joints and their holistic approach to mind-body health. Tai chi and qigong produce some benefits that go beyond the treatment of RA, such as improved balance, reduced stress and enhanced flexibility. RA patients may benefit because of reduced inflammation, improved circulation and joint mobility and enhanced muscle strength, as well as a reduction in chronic pain. These exercises can also produce cardiovascular and psychological benefits, since they reduce anxiety, stress and depression regardless of what ailment is being treated. Studies have found that they often improve the quality of life in general.⁵⁸⁻⁶⁶

Some of the studies discussed in this paper included small sample sizes or short study durations. Some studies did not specify which tai chi or qigong techniques were used in sufficient detail to replicate those studies. Thus, there is a need for larger, more rigorous, high-quality randomized controlled trials (RCTs). Comparisons could also be made to other RA interventions to see how tai chi and qigong stack up against the alternatives, such as physical therapy, yoga, medication, etc.

If one wanted to apply tai chi or qigong as a supplementary treatment to RA patients, several safe paths can be taken. Dr. Paul Lam developed a set of tai chi exercises using the Sun tai chi style that has been used to treat thousands of arthritis patients in more than 20 countries.⁶⁷ Although the exercise set he developed is not focused specifically on RA, the set can be used for a variety of patients, including RA or osteoarthritis, fall prevention and even other, unrelated ailments, because the practice of tai chi or qigong strengthens the body's natural immune system.

Many other options may also be used. Yang style tai chi has been used in many studies. In fact, Yang style is the most frequently used tai chi style, according to at least one study of the frequency of use of the various tai chi styles.⁶⁸ Many qigong sets could also be used, since they all strengthen the body's natural immune system. Baduanjin is the qigong exercise set most often used in medical trials,⁶⁹ but it is not the only exercise set that could be effective in the treatment of RA.

Duration is another issue to be addressed. Sixty minutes a day, five days a week is one option, but it is not the only one. Baduanjin

takes only 10-15 minutes to complete. The various Sun and Yang style exercises also do not take much time to complete. If one wants to exercise for 30 minutes, one could do the chosen set twice. If one wants to spend 60 minutes on the exercises, one could start with some meditation, followed by the actual exercise set, followed by a few minutes of cooling down. It might also be mentioned that not all studies require exercising 5 days a week. Some studies performed the exercise set just two or three times a week. A qualified tai chi or qigong instructor could make recommendations. I might mention that the instructor need not be certified to be an excellent instructor. Thus, lack of formal certification should not be a deal breaker when choosing an instructor. What is more important is knowledge of the subject, and some experience teaching people how to perform the exercises.

To address the reviewer's suggestions, we provide a clearer distinction between strong and weak evidence from the reviewed studies. Strong evidence is characterized by randomized controlled trials (RCTs) with moderate to larger sample sizes (e.g., >50 participants), standardized protocols, objective outcome measures (e.g., pain scales, joint function assessments), and statistically significant results ($p < 0.05$), often supported by multiple studies or systematic reviews. For instance, studies like Lee HY et al.,⁵² Lee KY et al.⁵³ and Shin JH et al.⁵⁷ provide stronger evidence, demonstrating significant reductions in pain, fatigue, and arterial stiffness, as well as improvements in quality of life and endothelial function, through RCTs with clear interventions and controls. Similarly, Lan et al.⁵¹ aggregates moderate evidence from multiple studies showing benefits in physical function and well-being. In contrast, weak evidence stems from small sample sizes (<50 participants), lack of randomization, methodological flaws (e.g., bias risks, heterogeneity), or inconclusive results, as seen in Han et al.⁴⁷ Lee MS et al.,⁵⁴ Macfarlane et al.⁵⁵ and Mudano et al.⁵⁶ where limited trials failed to show significant effects on disease activity or function. Narrative reviews like Akyuz⁴⁴ and Imoto et al.⁴⁸ highlight potential benefits but emphasize these limitations, underscoring the need for caution in interpreting results as definitive.

Regarding styles and protocols, the reviewed studies predominantly featured Yang-style Tai Chi, known for its gentle, flowing movements emphasizing posture, balance, and deep breathing, making it suitable for RA patients due to its low joint stress. General or simplified Tai Chi was also common, often adapted for accessibility, while Qigong appeared less frequently but included practices like Baduanjin, which focuses on eight structured exercises integrating movement, breath control, and mindfulness. Protocols typically lasted 8-12 weeks, with sessions of 30-60 minutes, 1-3 times weekly, sometimes combined with adjuncts like acupuncture. However, details were often vague, with few studies specifying exact forms (e.g., 24-form Yang style) or instructor qualifications, limiting replicability. Future research should prioritize detailed descriptions, including warm-up phases, core movements, cool-downs, and modifications for RA (e.g., seated variations to accommodate joint pain).

For future research directions, larger, high-quality RCTs with sample sizes exceeding 100 participants per arm are essential to overcome current limitations. These should incorporate blinded assessments, long-term follow-ups (e.g., 6-12 months), and comparisons to standard interventions like physical therapy, yoga, or pharmacotherapy to evaluate relative efficacy. Studies should also explore dose-response relationships (e.g., varying session frequency or duration), subgroup analyses (e.g., by RA severity or age), and biomarkers (e.g., inflammation markers like CRP). Integrating diverse styles, such as Chen or Sun Tai Chi for comparison with Yang, and Qigong sets like Yi Jin Jing, could broaden insights. Additionally,

hybrid protocols blending Tai Chi/Qigong with modern tech (e.g., app-guided sessions) warrant investigation for accessibility. As templates for future studies, we propose two sample protocols that can be adapted based on participant needs, study goals, and resources. These are designed for RA patients, emphasizing safety, gradual progression, and monitoring for joint discomfort.

Sample protocol 1: Yang-Style Tai Chi for RA management

This 12-week RCT protocol targets adults with mild-to-moderate RA (DAS28 score <5.1), with 100 participants randomized to intervention or waitlist control. Sessions occur twice weekly for 60 minutes, led by a certified instructor with RA experience. Week 1-2: Warm-up (10 minutes of gentle joint rotations and deep breathing); introduce basic Yang-style forms (e.g., Commencement, Parting Wild Horse's Mane from the 24-form set); focus on standing posture and slow movements. Week 3-8: Core practice (40 minutes) building to 10-15 forms, emphasizing weight shifts, arm circles, and balance; incorporate mindfulness (e.g., focus on breath synchronization). Week 9-12: Advanced integration (e.g., full 24-form sequence) with modifications (seated options if needed); cool-down (10 minutes of standing meditation and stretching). Home practice: 20 minutes daily via video guides. Outcomes: Measure pain (VAS), function (HAQ), quality of life (SF-36), and inflammation (ESR/CRP) at baseline, 6 weeks, 12 weeks, and 3-month follow-up. Safety: Monitor adverse events; adjust intensity if pain increases >2 on VAS.

Sample Protocol 2: Baduanjin Qigong for RA management

This 8-week RCT protocol suits elderly RA patients (age >60), with 80 participants randomized to intervention or education control. Sessions are three times weekly for 30 minutes, facilitated by a qualified Qigong practitioner. Week 1: Introduction and warm-up (5 minutes of relaxed breathing); teach the first two exercises (Supporting the Sky, Drawing the Bow). Week 2-4: Build to four exercises (e.g., Separating Heaven and Earth, Wise Owl Gazes Backwards), focusing on gentle postures, breath control, and mental focus (10-15 repetitions per exercise). Week 5-8: Full Baduanjin set (eight exercises), with emphasis on fluid transitions and joint-friendly adaptations (e.g., reduced arm elevation for shoulder pain); end with 5-minute cool-down meditation. Home practice: 15 minutes daily, tracked via journals. Outcomes: Assess fatigue (FACIT-F), joint flexibility (ROM measurements), anxiety (GAD-7), and overall well-being (WHOQOL-BREF) at baseline, 4 weeks, 8 weeks, and 6-month follow-up. Safety: Pre-screen for mobility; pause if dizziness occurs; encourage self-pacing.

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Conflicts of interest

The authors declare that there are no conflicts of interest

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